

## Identification Key

### IMPORTANT:

Colony diameters are from 7 day old cultures

\*indicates that there are related species that should be considered. These are discussed at the bottom of the species description

- 1. Predominantly biseriate ..... 2
- 1. Predominantly uniseriate ..... 43
  
- 2 (1) Colony diameter greater than 45 mm on CYA25 and/or MEA ..... 3
- 2 (1) Colony diameter less than 45 mm on CYA25 and MEA ..... 22
  
- 3 (2) Conidia in shades of green to blue-green on CYA25..... 4
- 3 (2) Conidia not green on CYA25..... 11
  
- 4 (3) Largest vesicles less than 20  $\mu\text{m}$  wide, stipes becoming brown in age .. 5
- 4 (3) Largest vesicles greater than 25  $\mu\text{m}$  wide, stipes remaining uncolored.. 7
  
- 5 (4) Colony diameter less than 35 mm on CYA37, cleistothecia absent ..... *A. caespitosus*
- 5 (4) Colony diameter greater than 50 mm on CYA37, cleistothecia present. 6
  
- 6 (5, 28) Ascospores with 2 thin longitudinal flanges ..... *Emericella nidulans*
- 6 (5, 28) Ascospores with 4 longitudinal flanges, 2 quite small..... *Emericella quadrilineata*
  
- 7 (4, 50) Conidial walls smooth to finely roughened..... 8
- 7 (4, 50) Conidial walls coarsely roughened ..... 9
  
- 8 (7) Conidia usually greyish yellow to olive brown in age on CYA25, conidial diameter 4-8.5  $\mu\text{m}$ ..... *A. oryzae*
- 8 (7) Conidia remaining olive green to parrot green in age on CYA25, conidial diameter 3-6  $\mu\text{m}$ ..... *A. flavus\**
  
- 9 (7) Conidia usually 3-6  $\mu\text{m}$  in diameter, colonies remaining in deep olive or green shades on CYA25 in age ..... *A. parasiticus*
- 9 (7) Conidia usually 5-8  $\mu\text{m}$  in diameter, colonies usually bronze to brown in age on CYA25 ..... 10
  
- 10 (9) Conidial heads predominantly uniseriate, conidia not ornamented with dark-colored tubercles ..... *A. sojae*
- 10 (9) Conidial heads variable, uniseriate and biseriate both usually present, conidia ornamented with dark-colored tubercles. .... *A. tamaritii\**
  
- 11 (3) Conidia in black, dark brown or bronze colors ..... 12
- 11 (3) Conidia in cinnamon, buff or yellow colors..... 16

Identification of common *Aspergillus* species

12 (11) Maximum conidial diameter less than or equal to 6 $\mu\text{m}$ .....	13
12 (11) Maximum conidial diameter 7 $\mu\text{m}$ or greater.....	15
13 (12) Conidia rough walled .....	<i>A. niger</i> *
13 (12) Conidia with smooth to finely roughened walls.....	14
14 (13) Colony diameter on CYA37 65-70 mm, mycelia on CY20S uncolored to pale yellow .....	<i>A. awamori</i>
14 (13) Colony diameter on CYA37 predominantly less than 65 mm, mycelia on CY20S often distinctly yellow .....	<i>A. foetidus</i>
15 (12) Colonies less than 30 mm on CYA37, conidial areas black .....	<i>A. carbonarius</i>
15 (12) Colonies greater than 40 mm on CYA 37, conidial areas olive to bronze .....	<i>A. tamaritii</i> *
16 (11, 34) Conidia 4-6 $\mu\text{m}$ long.....	<i>A. ostianus</i>
16 (11, 34) Conidia predominantly 3.5 $\mu\text{m}$ or less in length .....	17
17 (16) Conidial heads compactly columnar, conidia in camel to cinnamon colors, colony diameters on CYA37 predominantly 55-70 mm.....	<i>A. terreus</i>
17 (16) Conidial heads radiate when young, conidia in yellow to ochraceus colors, colony diameter on CYA37 usually less than 55 mm. ....	18
18 (17) Stipe walls smooth .....	<i>A. alliaceus</i>
18 (17) Stipe walls rough to warted.....	19
19 (18) Mature conidia yellow.....	20
19 (18) Mature conidia ochraceus, cream or buff.....	21
20 (19) Colonies on CYA25 dominated by yellow to orange sclerotia.....	<i>A. auricomus</i>
20 (19) Sclerotia, when present, white to buff in color .....	<i>A. sclerotiorum</i>
21 (19) Sclerotia, when present, dull pink to purple, longest stipes generally greater than 1000 $\mu\text{m}$ on MEA .....	<i>A. ochraceus</i>
21 (19) Sclerotia abundant, small, yellow becoming brown in age, longest stipes generally less than 800 $\mu\text{m}$ on MEA .....	<i>A. melleus</i>
22 (2) Conidia predominantly greater than 4 $\mu\text{m}$ in length.....	23
22 (2) Conidia predominantly 4 $\mu\text{m}$ or less in length .....	26
23 (22) Vesicles predominantly less than 20 $\mu\text{m}$ in diameter and conidial areas grey green to dark green.....	<i>A. caespitosus</i>
23 (22) Vesicles predominantly greater than 20 $\mu\text{m}$ in diameter, conidia variable .....	24

24 (23) Conidia dark brown to black, colonies greater than 45 mm on CYA37.....	<i>A. foetidus</i>
24 (23) Conidia yellow, buff or green, colonies less than 35 mm on CYA37.....	25
25 (24) Conidia yellow to buff, colony diameter 38-50 mm on CYA25.....	<i>A. ostianus</i>
25 (24) Conidia sparse, blue-green in color, colony diameter 10-25 mm on CYA25.....	<i>Chaetosartorya cremea</i>
25 (24) Conidia bronze or olive brown, colony diameter 25-35 mm on CYA25.....	<i>A. wentii</i>
26 (22) Conidia in green to blue-green colors on CYA25.....	27
26 (22) Conidia in other colors on CYA25.....	34
27 (26) Growth on CYA37 greater than 50 mm, cleistothecia present, surrounded by Hülle cells.....	28
27 (26) Growth on CYA37 less than 50 mm, cleistothecia, if present, not surrounded by Hülle cells.....	29
28 (27) Colonies on CYA25 less than 35 mm .....	<i>Emericella rugulosa</i>
28 (27) Colonies on CYA25 greater than 35 mm .....	go back to 6
29 (27) Vesicles predominantly greater than 20 µm in diameter.....	30
29 (27) Vesicles predominantly less than 20 µm in diameter.....	31
30 (29) Colonies on CY20S greater than 50 mm in diameter, conidia on MEA olive to orange-yellow .....	<i>A. wentii</i>
30 (29) Colonies on CY20S less than 40 mm, conidia on MEA cream to buff.....	<i>A. sparsus</i>
31 (29) Sterile thick-walled hyphae rising above the conidial heads .....	<i>A. unguis</i>
31 (29) Sterile thick-walled hyphae absent.....	32
32 (31) Colony diameter on CY20S and CYA25 greater than 35 mm.....	<i>A. caespitosus</i>
32 (31) Colony diameter on CY20S and CYA25 less than 35 mm .....	33
33 (32) Colonies grey-blue to blue-grey, conidia rough-walled.....	<i>A. sydowii</i>
33 (32) Colonies dull green to grey green, conidia smooth to finely roughened .....	<i>A. versicolor*</i>
34 (26) Conidia yellow to ochraceous in color AND colonies greater than 40 mm on CY20S and less than 40 mm on CYA37 .....	go back to 16
34 (26) Conidial color and colony diameters not as above.....	35
35 (34) Vesicles predominantly greater than 20 µm in diameter.....	36
35 (34) Vesicles predominantly less than 20 µm in diameter.....	37

Identification of common *Aspergillus* species

36 (35) Conidia white to pale yellow.....	<i>A. candidus</i>
36 (35) Conidia buff, tan or olive .....	go back to 30
37 (35) Colony diameters 55-70 mm on CYA37 and CY20S, conidial heads compactly columnar .....	<i>A. terreus</i>
37 (35) Colony diameters less than 55 mm on CYA37 and CY20S, conidial heads not compactly columnar .....	38
38 (37) Conidia on CYA25 white to pale yellow .....	39
38 (37) Conidia on CYA25, pink buff or tan.....	40
39 (38, 45) Vesicles predominantly greater than 15 $\mu$ m, metulae covering the entire surface of the vesicle .....	<i>A. candidus</i>
39 (38, 45) Vesicles predominantly less than 15 $\mu$ m, metulae covering the upper one to two thirds of the vesicle.....	<i>A. niveus</i>
40 (38) Conidia smooth-walled, conidia pink to tan on MEA or CY20S.....	41
40 (38) Conidia finely to coarsely roughened, conidia green, brown or olive on MEA or CY20S.....	42
41 (40) Conidia dull pink on CYA25 or MEA .....	<i>A. carneus</i>
41 (40) Conidia dull brownish-orange on CYA25 or MEA .....	<i>A. flavipes</i>
42 (40) Overall color on CYA25 pale orange/pink to tan, conidia usually finely roughened.....	<i>A. puniceus</i>
42 (40) Overall color on CYA25 pale brown to grey brown, conidia rough-walled, spiny .....	<i>A. ustus</i>
43 (1) Conidia on CYA25 black, white, tan, yellow or pink.....	44
43 (1) Conidia on CYA25 in shades of green, olive or turquoise.....	47
44 (43) Conidia on CYA25 very dark brown to black, rough-walled .....	<i>A. japonicus*</i>
44 (43) Conidia not black/brown on CYA25, smooth-walled.....	45
45 (44) Conidia white to off-white on CYA25, colonies on MEA less than 40 mm in diameter.....	go back to 39
45 (44) Conidia cream to yellow on CYA25, colonies 65-70 mm on MEA ...	<i>A. alliaceus</i>
45 (44) Conidia pale orange to pink on CYA25, colonies 40-65 mm on MEA .....	46
46 (45) Growth on CY20S predominantly 5-10 mm, longest stipes greater than 450 $\mu$ m.....	<i>A. kanagawaensis</i>
46 (45) Growth on CY20S predominantly 10-19 mm, longest stipes less than 450 $\mu$ m.....	<i>A. cervinus</i>
47 (43) Colony diameter on MEA greater than 30 mm .....	48
47 (43) Colony diameter on MEA less than 30 mm .....	53

48 (47) No growth on CYA37 .....	49
48 (47) Growth on CYA37 .....	50
49 (48) Reverse and soluble pigment generally bright yellow on CYA25, conidial walls smooth to finely roughened.....	<i>A. paradoxus</i>
49 (48) Reverse uncolored to dull yellow, soluble pigment absent on CYA25 conidial walls very rough .....	<i>Sclerocleista ornata</i>
50 (48) Conidia yellow green, olive to bronze .....	go back to 7
50 (48) Conidia grey green to blue green .....	51
51 (50) Conidial heads predominantly clavate, colonies on CYA37 less than 30 mm in diameter .....	<i>A. clavatus*</i>
51 (50) Conidial heads predominantly pyriform to spatulate, colonies on CYA37 greater than 55 mm in diameter .....	52
52 (51) Cleistothecia present .....	<i>Neosartorya fischeri*</i>
52 (51) Cleistothecia absent.....	<i>A. fumigatus</i>
53 (47) Cleistothecia absent.....	54
53 (47) Cleistothecia present .....	55
54 (53) Colony diameter 8 mm or less on CYA25 and less than 12 mm on CY20S, phialides covering more than half the vesicle, conidia borne as ellipses.....	<i>A. penicillioides</i>
54 (53) Colony diameter predominantly greater than 8 mm on CYA25, and greater than 15 mm on CY20S, phialides restricted to the upper third of the vesicle, conidia borne as cylinders .....	<i>A. restrictus</i>
55 (53) Ascospores rough-walled .....	<i>Eurotium amstelodam</i>
55 (53) Ascospores smooth-walled.....	56
56 (55) Ascospores with two distinct flanges .....	<i>Eurotium chevalieri</i>
56 (55) Ascospores without flanges.....	<i>Eurotium herbariorum</i>